Guest editorial

On social responsibility, reflexivity and development of cybernetics

1. Introduction

Socially responsible behaviour on the personal and organisational level is becoming one of the main topics in the world, especially when confronted with the profit-seeking practises of organisations at all levels, namely, from the global corporations, financial trusts to the local companies, faced with the need to optimise beyond their ability for function in a sustainable manner (Bobo, 1991; ISO, 2010; Mulej *et al.*, 2017; Perko *et al.*, 2019; UNO, 2020; Zenko and Mulej, 2011). The inability of the regulators to steer the development in a socially responsible path that upgrades the personal and organisational ethics standards is addressed by pointing out the need for other means of support, using reflexive cybernetic toolset, in supporting the socially responsible behaviour by all participants in the system (Espejo, 2015; Lepskiy, 2018).

Social responsibility should be integrated within the communication processes between representatives of the state, society and business. For this purpose, the adequate forms and technologies of public participation are to be created and embedded in the processes of life support and development of social systems. These mechanisms are necessary to support public participation, namely, legal, information, expert, analytical, reflexive, ethical, etc.

As a consequence, social responsibility has to be considered in a broader context than in standard ISO 26000 (ISO, 2010), which is limited to providing guidance on how businesses and organisations can operate in a socially responsible way. Acting in an ethical and transparent way that contributes to the health and welfare of society should include the state, society, business and above all, the people.

Kybernetes main topics are Systems thinking and cybernetics (Dominici *et al.*, 2020). Though the topic "social responsibility" is discussed in multiple Kybernetes papers, the special issue "social responsibility, reflexivity and development of cybernetics" offers the opportunity to compare multiple approaches and provide clear links to reflexivity and cybernetics. In this special issue, 11 papers reflect on relations between cybernetics, reflexivity, systems thinking and social responsibility.

2. The special issue contributions

2.1 Towards a holistic view of corporate social responsibility. The antecedent role of information asymmetry and cognitive distance. Caputo (2021) provides a conceptual framework for explaining the conditions and elements required for ensuring the success of strategies for corporate social responsibility (CSR). By adopting a systems view, the paper overcomes the limitations related to a reductionist view about the advantages and results of CSR to call attention on the conditions that should be met for ensuring the emergence of a shared approach to CSR.

He (Caputo, 2021) reflects on the role of cognitive and information flows in influencing companies' approaches and market expectations related to CSR. He builds upon the research streams related to the information asymmetry and cognitive distance, for identifying through the interpretative lens provided by systems studies, possible key drivers on which policymakers, researchers and practitioners should act for building a suitable, shared and long-term-oriented path for CSR.

Kybernetes
Vol. 50 No. 3, 2021
pp. 633-638

0368-492X
DOI 10.1108/K-12-2020-0869

Caputo (2021) defines a scenario map about CSR in the light of information asymmetry and cognitive distance. Such a map supports both researchers and practitioners in better understanding the actions and paths required for building a shared approach to CSR.

2.2 An agenda for ontological cybernetics and social responsibility. Espejo and Lepskiy (2021) offer integration of Vladimir Lepskiy's third-order cybernetics variant and Raul Espejo's Viplan methodology. They combine mechanisms for social responsibility and a methodology to improve them through self-developing reflexive-active environments. The authors rely on the modern philosophy of science, which sets the foundation of ontological cybernetics, constructed by subjects with different epistemological stances. This concept includes considerations for social values, worldview principles, multiple viewpoints and subject-oriented information and communication platforms and enables the inclusion of stakeholders in societal problem-solving through participatory methods and democratic approaches.

Current negative trends in socio-economic and environmental developments are associated with weaker social responsibilities of those holding power in society. To increase the level of social responsibility, the authors argue that it is necessary to introduce more effective governance and development mechanisms. The proposed methodology ensures more effective interactions of stakeholders towards creating, regulating and implementing societal problem-solving.

2.3 Hybrid reality development-can social responsibility concepts provide guidance? Perko (2021) aims to define hybrid reality (HyR) as an ongoing process in which artificial intelligence (AI) technology gradually introduces itself in reality as an active stakeholder by using reasoning to execute real-life activities.

A combination of systemic tools is used to examine and assess the development of HyR, starting with evolutionary and learning concepts, leading to the new meta-system development, the viable system model (VSM) and AI, invoking social responsibility as an ethical norm in the conceptual framework.

Two system dynamics-based interactions models are introduced, namely, the state-of-the-art HyR model and an SR concept-based future HyR model. In the state-of-the-art HyR model, interactions asymmetries between stakeholders are identified, potentially leading to pathological behaviour and AI technology learning corruption. To mitigate these, an interaction model based on SR concepts is proposed and examined on the example of an autonomous vehicle transport service. The examination results display significant changes in the conceptual understanding of AI technology in society, its utilisation and data-sharing concepts.

2.4 Society 5.0: balancing of industry 4.0, economic advancement and social problems. Potocan *et al.* (2021) report how Society 5.0 balances Industry 4.0, responsible economic development and resolution of social problems by the advancement of CSR in organisations.

Drawing from the organisation, sustainable development and social functionalism theories, the authors designed an integral model of CSR in line with the goals of a forward-looking and socially responsible society. This study includes analysing the present governing principles, multi-disciplinary and multi-functional consideration and development of the integral framework for CSR in organisations. They suggest incorporation of technology in models of CSR, a regionally grounded solving of individuals' social problems and changing of CSR's environmental, social and economic dimensions according to circumstances of Society 5.0.

The reported study proposed an integral model of CSR for solving the main social problems with the usage of advanced technologies in responsible economic growth founded on circumstances of Society 5.0, previously not considered in the literature.

2.5 Convergent social responsibility as the key to corporate strategic success. Raikov (2021) aims to increase CSR, including business acting ethically and transparently, through the prism of strategic conversation with applying the author's convergent methodology that ensures the integrity, purposefulness and sustainability of development of corporations in the external environment.

The methodology is based on international CSR standards, strategic planning, networked virtual collaboration, group cognitive (conceptual) modelling, inverse problem-solving in topological spaces, categories theory, control thermodynamics, big data analysis for cognitive models verification and quantum semantic approach. It involves a series of strategic conversations.

The author (Raikov, 2021) states that this approach can be useful for ensuring a sustainable and purposeful assembly of a strategic collective subject in an interdisciplinary condition with the reflexive-active environment.

Additionally, he (Raikov, 2021) concludes that the CSR situation cannot be described in a clear, logical and formalised way and a traditional computer model cannot be created for this case with a formalised approach. The proposed convergent methodology with cognitive modelling helps to do it.

2.6 Government investment strategy and platform pricing decisions with the cross-market network externality. Xu *et al.* (2021) explore the organisation pricing decisions and its optimal profit under the given government investment, and then investigate the investment decision to improve social responsibility, which is measured by social welfare.

When exploring the optimal pricing decisions under the given government investment, extreme value theory and sensitivity analysis are used. When investigating the investment level, game theory and optimisation methods are used. Numerical examples are conducted to illustrate the results further. The government investment decision on whether the buyers and sellers are charged depends on the investment level and the difference of the cross-market network externality (CNC). Secondly, the optimal price on the sellers is decreasing (increasing) in the CNC of the buyers (sellers). The optimal price on the buyers is significantly affected by the government investment level. Finally, the investment provides positive effects for both platforms; thus, they (Xu *et al.*, 2021) recommend an active government investment policy.

2.7 Implications for pure profit, environmental impact and social welfare in a socially responsible supply chain. Members in a supply chain account for CSR in different ways (Zhang *et al.*, 2021). They examine a socially responsible supply chain in which the manufacturer innovates in a sustainable product while the retailer exhibits CSR concerns. They focus in how sustainable innovations or CSR concerns, affect the pure profit, environmental impact and social welfare, in a socially responsible supply chain. The authors first construct an integrated case as a benchmark and then develop a manufacturer-Stackelberg game in a decentralised scenario. The pure profit, environmental impact and social welfare are analysed in centralised and decentralised cases. Moreover, two unique coordinating contracts, i.e. wholesale price discount contract and revenue-sharing contract are used in the socially responsible supply chain simulation.

Authors (Zhang *et al.*, 2021) exhibit that, under certain conditions, the optimal CSR strategies hold for maximising pure channel profit, minimising environmental impact and maximising social welfare. Whether the performance in a centralised case outnumbers that in a decentralised case depends on the CSR concerns level and environment-friendly degree of the product. In addition, it is found that a wholesale price discount contract is better for the retailer, whereas a revenue-sharing contract is better for the manufacturer in pure profit to improve coordinating efficiency.

Specifically, under certain conditions, placing more emphasis on CSR level increases pure channel profit and social welfare. A balance between pure profit and social welfare is thereby achieved for the two socially responsible individuals by designing a proper contract.

2.8 Co-design of a stakeholders' ecosystem: an assessment methodology by linking social network analysis, stakeholder theory and participatory mapping. Based on the stakeholder theory (Cottafava and Corazza, 2021) propose a user-friendly visualisation tool and a unique approach to identify and engage stakeholders, to co-design the sustainability ecosystem at the local scale, to explore it and to assess the impact of a large organisation within the identified ecosystem.

The methodology consists of two main processes:

(1) Identifying an ontological map of the sustainability topics network.

(2) Designing the local sustainability stakeholders ecosystem.

Both processes are based on a nodes identification phase and a nodes prioritisation phase.

They (Cottafava and Corazza, 2021) post that: betweenness centrality results to be the best indicator to assess the importance of a stakeholder concerning the whole network, while eigenvector centrality highlights the quality of the already engaged stakeholders of an organisation, as it mainly depends on the number of links of the first order neighbours. On the contrary, the closeness centrality, when applied to a small network, seems to be not appropriate to assess the centrality of a stakeholder.

Research limitations/implications: this approach revealed some criticalities in the mapping process, as in the weighting link procedure. Further investigations are needed to generalise the approach to a dynamic one, to allow real-time mapping and to develop a robust interconnection amongst centrality degrees and the power, interest and legitimacy concept of stakeholder theory.

2.9 Research and development investment, environmental, social and governance performance and green innovation performance: evidence from China. Liu *et al.* (2021) examine the impacts of research and development (R&D) investment and environmental, social and governance (ESG) performance on green innovation. They focus on the moderating effect of ESG performance between R&D investment and green innovation performance. Green innovation performance is measured by the total number of green patents, the number of green invention patents and the number of green non-invention patents.

They conclude that R&D investment has a positive impact on green innovation performance, and ESG performance can increase the number of green invention patents. In addition, ESG performance moderates the relationship between R&D investment and green innovation performance.

The findings may help managers and policymakers in developing countries to make ecological innovation strategies to achieve corporate sustainability.

2.10 Artificial intelligence and social responsibility: the case of the artificial intelligence strategies in the USA, Russia and China. Saveliev and Zhurenkov (2021) analyse how the development and utilisation of AI technologies for social responsibility are defined in the national AI strategies of the USA, Russia and China. According to the authors (Saveliev and Zhurenkov, 2021), the notion of holistic (social) responsibility concerning within AI legal frameworks is currently not to be found in any of the examined countries.

According to the unified framework of five principles for AI in society, the examined strategies for the development of AI in the USA, Russia and China contain some components aimed at achieving public responsibility and responsible use of AI. However, holistic addressing the issue cannot be identified.

The analysis provided in the paper is a first-time example of how the unified framework of five principles for AI in society can be applied as an assessment tool to determine social responsibility in AI-related strategic documents.

2.11 The viable system model's support to social responsibility. Zlatanović *et al.* (2021) expose the consequences of socially irresponsible behaviour and state possible requisitely holistic tools to eliminate organisations' dangerous and socially irresponsible behaviour. The authors' main aim is to examine how the VSM, used as a diagnostic tool, can help organisations support socially responsible behaviour.

Authors claim that by following the cybernetic circle of the preparation and implementation of the management process and practising social responsibility via the VSM, organisations can conduct socially responsible business operations for a socially responsible society. They (Zlatanović *et al.*, 2021) suggest to support VSM by interpretive systems approaches such as strategic assumptions surfacing and testing.

3. Conclusions

The reflexive approach in invoking social responsibility concepts and its implications for AI technology development provides multiple complexity levels into the process. Based on the research contributions, there are no complications, but necessary considerations, required for the sustainable development.

In this special issue, multiple approaches complement each other. Philosophical and conceptual backgrounds are elaborated, ranging from ontological reflexive concepts (Espejo and Lepskiy, 2021), elaborating society 5.0 emerging social problems in relation to industry 4.0 (Potocan *et al.*, 2021) invoking the information asymmetry perspectives (Caputo, 2021) and proposing an active, SR-based, ethical and moral behavioural norm set (Perko, 2021).

The conceptual formulations are followed by the strategic analysis of the AI technology implication at the national level, following the unified framework of five principles for AI in society (Saveliev and Zhurenkov, 2021), at the organisation strategic level (Raikov, 2021) and identifying irresponsible behaviour patterns within a company, using VSM as an analytic tool (Zlatanović *et al.*, 2021).

The empirical implications for the organisation environment are examined. Cottafava and Corazza (2021) propose a tool to identify and assess active stakeholders of an organisation, Liu *et al.* (2021) elaborate on the effects of institutional support on green innovation performance, and (Xu *et al.*, 2021) the price formation supporting the viability of all stakeholders in the supply chain. Zhang *et al.* (2021) provide relations between pure profit, environmental impact and social welfare in a socially responsible supply chain.

The special issue "social responsibility, reflexivity and development of cybernetics" attempts to provide a requisitely holistic overview on the development of cybernetics – the science of communication and control in the environment, in the era, where technology is redesigning all processes in our society and forms its place as an active stakeholder. Even though reflexive thought and socially responsible behaviour are closely connected with the cybernetic concepts, they are to be further examined to help develop cybernetics capacities to meet the challenges in our path to the viability of individuals, organisations, society and the environment.

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